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ABSTRACT

This report presents results of a study involving the School Renaissance program. The School Renaissance Learning package includes the Accelerated Reader program, which has been shown to improve students' reading achievement and reading attitudes. Four elementary schools were chosen for the study, which included two treatment schools (designated as model Renaissance schools) and two contrast schools. Student test scores served as input for an analysis-of-covariance (ANCOVA) data treatment design. Trained observers were also sent into the classrooms to measure the implementation of the Reading Renaissance program and certain aspects of the classroom and teacher-student interactions. In all comparisons involving standardized test scores in reading, language arts, and mathematics, the Renaissance schools' children outperformed the contrast schools' children. Other analytical results suggest that the Accelerated Reader produces the greatest gains with lower achieving students. One treatment school with a student body with 52 percent free/reduced-priced lunch eligible, had 97 percent of its students obtain a "passing" score on the 2002 Criterion-Referenced Competency Test, with nearly 75 percent scoring "exceeds expectation." The conclusion is that the Renaissance program was highly effective in raising the performance of these elementary students. Two appendices contain program-implementation checklists. (Contains 15 references and 10 tables.) (RT)

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A Controlled Evaluation of a Total School Improvement Process, School Renaissance.

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February 7, 2003

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A CONTROLLED EVALUATION OF A TOTAL SCHOOL IMPROVEMENT PROCESS, SCHOOL RENAISSANCE

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The reform of education movements of the last decade in many states culminated in the *No Child Left Behind Act of 2001* which was signed into law on January 8, 2002. This act along with increasing accountability, providing more choice for parents, and more flexibility for LEAs, placed a stronger emphasis on the use of federal education dollars for reading instruction, especially for younger and needier children (USDOE, 2002). These changes have generated an increased interest in programs designed to improve achievement levels in children performing below grade level. The purpose of this study was to evaluate one such program, the School Renaissance, which seeks to increase academic achievement in all areas of the curriculum through the use of proven teaching methods.

Research done previously by the Renaissance Learning Institute has demonstrated that schoolchildren in the United States spend a very small amount of class time during each school day actually involved in reading activities. One of the largest reading studies ever conducted argued that to grow in reading ability, one must spend a sufficient quantity of time engaged in the practice of reading, and that the amount of growth in reading ability correlates to the quantity of time spent engaged in such activities (Topping & Paul, 1999). This argument has been further refined by the Renaissance Learning Institute to state that increasing the difficulty of the reading material also correlates with growth in reading ability. This theory is supported by Anderson, Wilson, & Fielding, (1998) who found that children who score in the 90th percentile on standardized tests read 228 more words per year in printed media such as children's books and magazines than do children who score in the 10th percentile. This suggests that print media that is considered lexically rich may lead to vocabulary development, which in turn leads to increased reading ability. In a study that summarized many factors that put children at risk of being poor readers, Snow, Burns, & Griffin (1998) explained that daily reading of many different texts that are at an appropriate level could possibly prevent children from becoming poor readers. More current research in this area discovered that using higher levels of reading practice to lead to higher levels of reading achievement can be further enhanced by having teachers monitor and guide the reading practice of students (Topping & Sanders, 2000). The Accelerated Reader program allows teachers to track reading level, as well as reading quantity, across their students. Using the Accelerated Reader program, teachers and students can receive guidance and immediate feedback that pertains to their reading assignments.

Paper presented at the National Renaissance Conference, Nashville, TN, February 7, 2003

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One of the earlier experiments measured reading test data from a sample of 4,498 students in a school that used the Accelerated Reader program. The sample of students ranged in age from age 6 to age 16 across 64 schools. Analysis indicated a strong positive relationship between the number of points earned in the Accelerated Reader program and gains in reading test scores. Interestingly, students with the lowest ability showed the greatest gain (Paul, 1992). Paul (1993), in a second more detailed study, used data from 10,124 students across 136 schools. These students ranged from first to ninth grade, and data from 12 different standardized tests were used. Similar results were discovered, and a positive relationship with increased math scores was also found.

Use of the Accelerated Reader program, which is part of the School Renaissance Learning package, has been shown not only to improve reading achievement, but also to improve reading attitudes among students of varying ages. Peak & Dewalt (1994) conducted a five-year longitudinal study of 50 students from third to ninth grades. They found among the results that the Accelerated Reader students had better reading attitudes than the control group who did not use the Accelerated Reader program. Similar results are found when examining students in schools and classrooms, which use the Accelerated Math software, which is another component of the School Renaissance program. In 1999, a large Midwestern school district used one fourth-grade and one fifth-grade classroom from four elementary schools to study the effectiveness of the Accelerated Math program. After five months of implementation, an ANCOVA was used to compare the students' scores on the STAR Math test, and significant differences were found between the Accelerated Math group and the non-Accelerated Math group who were from the same schools (Spicuzza et al., 2001).

Another study that found similar results examined the attitudes and math achievement of a nationwide sample that included 2,201 students from grades 3 through 8. These students were from 24 states, and the study compared Accelerated Math classrooms to classrooms in the same schools that did not use the program. This study examined the benefits of the Accelerated Math program after only one semester of implementation. The gains of the students from the Accelerated Math classrooms were consistent across low, middle, and high-achieving students, and the researchers found that students in the Accelerated Math classrooms achieved higher gains than students in the control groups. The difference in the gains ranged from 14 percentile points in grades 3 through 5, to 7 percentile points in grade 6. A significantly greater number of students in classrooms where Accelerated Math was implemented reported that they liked math more this year than last year, and that they helped their fellow students more. Additionally, it was reported that teachers in the Accelerated Math classrooms were better able respond to the individual needs of their students than those teachers in the control classrooms, because they spent less time in group instructional settings. The classrooms that used a high level of program implementation showed gains of up to 18 percentile points, which was 9 times greater than the gains found in the control classrooms (Ysseldyke & Tardrew, 2002). This speaks of the value of professional training and development for teachers who use the Accelerated Math program.

Studies conducted on the professional development portion of the School Renaissance program show higher results from Accelerated Reader and Accelerated Math classrooms and schools when the teacher has participated in a sufficient amount of Renaissance Professional Development. One such study found that teachers who had completed Reading Renaissance training were significantly more effective than teachers who had not. The same study also

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found that Reading Renaissance Model-certified classrooms were more effectively than classrooms that were not certified (Sanders & Topping, 1999). Furthermore, a three-year study by the School Renaissance Institute found similar results. In this study conducted in schools in Idaho, students in schools that had Renaissance Model-certified classrooms gained 7 percentiles on the Star Reading, standardized, norm-referenced reading test. Additionally, students in the schools that employed 10 Renaissance-trained educators gained 5 percentiles, while students in the schools that employed 5 Renaissance-trained educators gained 2 percentiles (2002).

Smith and Clark (2001) conducted a study on 3,649 students in a large Texas school district, where the Reading Renaissance program was implemented during the 2000-2001 school year. These students gained an average of 7 percentile points on the STAR Reading test over the year. Fourth and fifth grade students showed accelerated growth as shown on the Texas Assessment of Academic Skills, demonstrating improvements on the Texas Learning Index of 4.1 points for fourth graders and 3.0 points for fifth graders.

An independent research project conducted by Jones and Coody (2001) at Bleckley Primary School in Cochran, Georgia demonstrated what the implementation of the entire Reading Renaissance Program can do for test scores. This school implemented the Accelerated Reader with professional development, Power Lessons, the Duolog Reading method, and achieved Model Certification in Reading. During a five-year period, the first grade rose from 53rd to 88th percentile as measured by the Iowa Test of Basic Skills complete version. Over the same period of time, the second grade went from the 51st percentile to the 75th percentile. As a result of these improvements, the school won a National Title I Distinguished School Award in 2001.

There is now an ever-increasing body of current research that is aimed primarily at showing the effectiveness of the School Renaissance program, and the cross-curricular effect of improvements in reading ability. Surprisingly, students in classrooms that use the Accelerated Reader program not only score higher in reading, but also in other subjects, specifically math, writing, social studies, and science. One popular theory to explain this phenomenon is that as students become better readers, they are better able to comprehend the reading materials used in their other subjects, and therefore, classroom instruction is more efficient. Other theories include the accelerated students being better test takers, and also having higher-order cognitive skills (Paul, Swanson, Zhang, & Hehenberger, 1997, 2000).

One study that supports these hypotheses found a strong connection between high-end standardized test scores, and schools that own the Accelerated Reader program. The schools that owned the Accelerated Reader program demonstrated a higher average adjusted mean scale score in every grade-subject pair than the schools that do not own the schools that own the Accelerated Reader program. The differences were significant with p values ranging from 0.016 for seventh-grade social studies to 1.0 x 10(-9) for fourth-grade language arts. Additionally, the schools that own the Accelerated Reader program demonstrated a higher average adjusted mean gain in 27 of the 30 grade-subject pairs (Paul, Swanson, Zhang, & Hehenberger, 1997, 2000).

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Research Design and Methodology

Four schools were chosen to be part of this study, two treatment schools and two contrast schools. The treatment schools were two elementary schools designated as model Renaissance schools, meaning that not only were they using Reading Renaissance and Math Renaissance, but that the faculties had been trained in School Renaissance. It was very difficult to find Title I schools in Georgia to serve as contrast schools that did not themselves own Accelerated Reader. The two contrast schools chosen were schools that, although own Accelerated Reader, appear to use it and STAR Reading to a limited extent and had faculties which had received little, if any, training by the company. They were matched to the treatment schools on % free and reduced lunch participation, % majority students, and as close as possible, to geographic location (see Table 1). Visits were made to each classroom in the four schools early in the 2001-2002 school year and again towards the end of that same school year. These observation were made to record what was occurring the schools.

Since contrast rather than control schools were used an ANCOVA design was employed. For a single cohort of students scores from the ITBS spring 2000 were collected to use as a covariate. These tests were taken prior to provision of on-site technical assistance. Scores from the Georgia CRCT for these same students were gathered from the spring 2001 and spring 2002 administrations of the test. These were used as the dependent variables in the ANCOVAs. Reading, Language Arts, and Mathematic scores were obtained for each of the tests. The 2002 scores were collected to see if whatever gains over the contrast students the treatment students had made in the first year would be maintained or even improved upon. Only students for which scores were available for all years were included in the analyses.

Table 1
Demographics of the schools

School	Grade organization	2001 K-5 enrollment	%majority	%F/R
Treatment 1	PK-5	1,044	8%	92%
Contrast 1	PK-5	497	1%	96%
Treatment 2	PK-5	403	99%	52%
Contrast 2	K-5	343	97%	41%

In addition since all four schools have been using the Accelerated Reader program at least since the 2000-2001 school year, STAR reading test results were collected for the two years for students that were in grades 2, 3, and 4 during 2000-2001. ANCOVA was used to analyze the spring 2002 scores with the spring 2001 scores serving as the covariate.

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Treatment One School

Treatment One School is located in central Georgia and is also a part of the Atlanta Metropolitan Statistical Area (MSA). Treatment One School encompasses grades PK through 5 with an enrollment which includes 88% black and 8% white students, and has an equal number of male and female students. Of the student body, 92% is eligible for the free/reduced-price lunch program. Norm-Referenced Assessment scores for Treatment One were gathered in 2001 using the Stanford Achievement Test (version 9), and students in the third grade scored in the 19th percentile for total reading, in the 10th percentile for total mathematics, and in the 19th percentile for language arts. Students in the fifth grade scored in the 21st percentile for total reading, in the 24th percentile for total mathematics, and in the 22nd percentile for language arts.

Treatment One School uses the Reading Renaissance and Math Renaissance programs with STAR testing for diagnostics, and it seems the administration, faculty, staff, and students were all very familiar with the point system in Accelerated Reader. Recognition and rewards were very visible, and goals for this year were set. The school possessed both Model and Master Classrooms, as well as having achieved "Master School" status. There is a monthly reading recognition assembly to recognize classes and students who have excelled in reading. This is followed by an all day "read-in" where students read to one another, read silently, and are read to by teachers. All students appeared to be excited about reading.

The classrooms at Treatment One School mandate 60 minutes of reading each day: K-2 have reading block time and 3rd, 4th and 5th have reading block integrated with language arts. Pre-K has not participated in the past, but will be participating during the treatment year. At the end of the day for 15 minutes, each classroom has DEAR (Drop Everything and Read) time. Classes observed were very focused on their individual reading book these last 15 minutes. All classrooms have at least two computers and most have four computers available for students to take Accelerated Reader practice quizzes. The students are reading Accelerated Reader books twice before taking practice quizzes.

This is the first year for Renaissance Math at Treatment One School. It seems that this school will use their own math classroom objectives along with the Accelerated Math objectives. They have individual classroom objectives, then the Accelerated Math objectives. All diagnostics, recognition, and teacher procedures and student procedures are in place, and the teachers are all working together to get things up and running. Training is an ongoing process with the Renaissance Coordinator.

Teachers that received model classroom certification from Reading Renaissance for Treatment One School included almost 8 out of 10 (77%) teachers (n=13) in the school. We found from our research that 6 out of 10 (62%) teachers surveyed had been implementing Reading Renaissance in their classrooms for 1 or more years. 18% of teachers, in their reading classrooms, said that their students spend less than 30 minutes each day involved in reading activities, while more than half of teachers (55%) said that their students spent 30 to 45 minutes each day, and the other 27% of classroom teachers had their students spend more than an hour. In rating the effectiveness of the Reading Renaissance program for helping

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them improve the reading skills of their students on a Likert scale, 1 being "Very Ineffective" and 10 being "Very Effective", the mean response from teachers was 8.2 (SD = 1.3, n = 11). On the same Likert scale, most teachers seemed to agree that the Reading Renaissance program was very effective in helping them to foster a greater love for reading in their students (M = 8.6, SD = 1.2).

Teachers were asked to rate how effective they thought the Reading Renaissance Professional Development seminars were in preparing them to implement the program in their classrooms. Responding on the same scale as above, teachers stated that the seminars were fairly effective for them (M = 7.8, SD = 1.9). Teachers at Treatment One School seemed very satisfied with Reading Renaissance. They responded with a mean response of 9, with (SD = 1). According to the survey, administrators seem to have granted a great deal of support to the teachers for the implementation of the program (M = 9.6, SD = 0.7).

Based on the feedback received from parents, teachers rated the satisfaction of parents to the Reading Renaissance program as fairly positive (M = 7.5, SD = 1.4). Based on the feedback received from students, teachers seemed to think the children loved the program (M = 9, SD = 1.2).

As for the Math Renaissance program, no teachers received the Model Classroom certification. In the two survey items aimed at rating the overall effectiveness of the Math Renaissance program, including professional development, teachers responded on a Likert scale with a mean response of M = 7.3 (SD = 2.1). In three items that rated the satisfaction of teachers, parents, and students with the program, classroom teachers gave a mean rating of M = 7.8 (SD = 2.2). Program support to teachers from the school administration was rated very highly (M = 9.3, SD = 1.5).

Contrast One School

Contrast One School is located in east central Georgia, and serves grades PK through 5. Contrast One School's total enrollment includes 99% black students, with male and female student numbers being equal. Free/Reduced-priced lunch program students include 96% of the student body. Norm-Referenced Assessment scores for Contrast One School were gathered in 2001 using the Stanford Achievement Test (version 9), and students in the third grade scored in the 28th percentile for total reading, in the 26th percentile for total mathematics, and in the 38th percentile for language arts. Students in the fifth grade scored in the 20th percentile for total reading, in the 26th percentile for total mathematics, and in the 27th percentile for language arts.

Contrast One School uses the Accelerated Reader program with the STAR diagnostic program. Students in Pre-K do not participate. The children in grades 1-3 are provided a reading time during their 2-1/2 hour language arts class, at which time they can select a book

to read, with many using this time to choose an accelerated reader. They are not fully engaged in reading during this time. Students are given additional reading time at the finish of the next subject. At the end of each day, the students have 10-15 minutes of reading time as part of the DEAR program. Each classroom has 3 to 6 computers that are set up for taking Accelerated Reader quizzes. Total books read is the form of recognition used to encourage reading.

The students at Contrast Two School are familiar with the Accelerated Reader procedures for taking quiz, recording books read in their logs, going to media center to get new books, reading out loud to other students, being read to by teachers and reading independently. The student's time in doing these Accelerated Reader procedures is not always productive and the students seem to be causing distraction to other students. Teachers are also familiar with the Accelerated Reader procedures for students and are able to assist new students with getting started in the program. And, the older grades (3-5) have students that are also available to assist new students. Teachers are familiar with the reports and weekly review the student log which indicates how many books students have read, grade level of books read and then number of quizzes taken with score results. The at-risk students are identified on this report and teachers work with these students. It was not clear who was responsible for training and coordination of the Accelerated Reader program at Contrast One School. Some teachers liked the program, while others used it only as much as they had to.

Only one (5%) of the teachers (n=19) in the Contrast One School had received model classroom certification from Reading Renaissance. However, we discovered that close to half (47%) of the teachers surveyed had implemented the Reading Renaissance program in their classrooms for 1 or more year. 13% of teachers, in their reading classrooms, said that their students spend less than 30 minutes each day involved in reading activities, while 27% said that theirs spent 30 to 45 minutes each day, and exactly 6 out of every 10 (60%) classrooms spent more than an hour. In rating the effectiveness of the Reading Renaissance program for helping them improve the reading skills of their students on a Likert scale, 1 being "Very Ineffective" and 10 being "Very Effective", the mean response from teachers was 8.2 (SD = 1.7, n = 13). Responding on the same type scale, most teachers seemed to agree that the Reading Renaissance program was very effective in helping then to foster a greater love for reading in their students, but there was some variance in their responses (M = 8.2, SD = 1.5).

Teachers were asked to rate how effective they thought the Reading Renaissance Professional Development seminars were in preparing them to implement the program in their classrooms. Responding on the same scale as above, teachers stated that the seminars were very effective for them (M = 8, SD = 1.8). Teachers at Contrast One School seemed to have a great deal of satisfaction with Reading Renaissance, and responded with a mean response of 8.7 (SD = 1.7). According to the survey, administrators seem to give less support to the teachers for the implementation of the program than did the administrators of the other three schools (M = 7.9, SD = 2.5).

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Based on the feedback received from parents, teachers rated the satisfaction of parents to the Reading Renaissance program as fairly positive ($M = 7.7$, $SD = 0.9$). Based on the feedback received from students, teachers rated the satisfaction of students a little higher ($M = 8.8$, $SD = 1.8$).

Treatment Two School

Treatment Two School is located in the northernmost part of Georgia, and also is covered by the beautiful north Georgia mountains. Treatment Two School serves grades PK through 5. The school's total enrollment includes 99% white students, with an equivalent number of male and female students. Free/Reduced-priced lunch eligible students equal 52% of the entire student body. Norm-Referenced Assessment scores for Treatment Two School were gathered in 2001 using the Stanford Achievement Test (version 9), and students in the third grade scored in the 69th percentile for total reading, in the 71st percentile for total mathematics, and in the 65th percentile for language arts. Students in the fifth grade scored in the 66th percentile for total reading, in the 62nd percentile for total mathematics, and in the 66th percentile for language arts.

The Treatment Two School uses the Reading Renaissance and Math Renaissance programs with STAR for diagnostics. Treatment Two School has had the Accelerated Reader program for 10 years and has used the Renaissance Program for the past five years. They are Renaissance Model and Master Classrooms and the school has achieved "Master School" status. Classrooms have four computers per classroom set up with Accelerated Reader practice quizzes. All administration, teachers and students are very familiar with all of the procedures for Accelerated Reader. The students are reading Accelerated Reader books twice before taking practice quizzes. The only Reading Renaissance that is not being followed is the TOPS report and that is due to a problem with the program installation. Once corrected, this will be used. The teachers were very excited about the program and have aligned their objectives with the Renaissance objectives and can easily assess each student's achievement on daily or weekly basis. Allowing for 60 minutes of independent reading is now a routine for the students and they appear to be fully engaged during allotted reading times during each day. There is no time wasted during transitioning from other subject matter to reading. Treatment Two School uses the point system and students are recognized in the classroom with individual pennants, wall posters, and classroom pennants hanging at entrance to room. The school also has a Wall of Recognition and very large wall hangings at the entrance to school.

As for mathematics, the teachers are new to using the procedures, with scanners and printers being delivered and installed during days of observations. The objectives are identified and teachers have immediate access to each individual student's achievement and work very closely with student to attain all objectives. Teachers review all missed questions and require students to redo the work for teacher's review. Teachers recently attended a professional development workshop with Renaissance. The coordinator is very effective in her position and monitors all reports and assists teachers in identifying students at risk in both Accelerated Reader and Accelerated Math. The diagnostic reports generated allow for this

type of instant assistance for the teacher and the student.

Teachers that received model classroom certification from Reading Renaissance at Treatment Two School included almost the total number (97%) of teachers (n=61) in the school. We found that almost all (95%) of the teachers surveyed had been implementing Reading Renaissance in their classrooms for more than 1 year. Only a minority (4%) of teachers said that students in their reading classrooms spend less than 30 minutes each day involved in reading activities, while 39% said that theirs spent 30 to 45 minutes each day, and the other 57% of classrooms spent more than an hour. In rating the effectiveness of the Reading Renaissance program for helping them to improve the reading skills of their students on a Likert scale, 1 being "Very Ineffective" and 10 being "Very Effective", the mean response from teachers was 8 (SD = 2.2, n = 60). On the same scale, most teachers seemed to agree that the Reading Renaissance program was fairly effective in helping then to foster a greater love for reading in their students, but there was some variance in their responses (M = 7, SD = 2.4).

Teachers were also asked to rate how effective they thought the Reading Renaissance Professional Development seminars were in preparing them to implement the program in their classrooms. Responding on the same scale as above, teachers stated that the seminars were effective for them (M = 8.4, SD = 1.2). Teachers rated their overall satisfaction with Reading Renaissance with a mean response of 8.1, and there was some variance (SD = 1.7). According to the survey, administrators at Treatment Two School seem to have granted a great deal of support to the teachers for the implementation of the program (M=9.6, SD=0.8).

Based on the feedback received from parents, teachers rated the satisfaction of parents to the Reading Renaissance program as fairly positive (M = 6.8, SD = 2). Based on the feedback received from students, teachers rated the satisfaction of students a little higher (M = 7.3, SD = 1).

As for the Math Renaissance program, only 17% of teachers received the Model Classroom certification. In the two survey items aimed at rating the overall effectiveness of the Math Renaissance program, including professional development, teachers gave responded on a Likert scale with a mean response of M = 7.9 (SD = 1.8). In three items that rated the satisfaction of teachers, parents, and students with the program, classroom teachers gave a mean rating of M = 7.9 (SD = 1.7). Support from school administration was rated very highly at the Treatment Two School (M = 9.1, SD = 1.5).

Contrast Two School

Contrast Two School is located in the mountains of North Georgia, and serves grades K through 5. Contrast two's total enrollment includes 97% white students, with an equal

number of male and female students. Students who receive Free/Reduced-price lunch included 41% of the student body. Norm-Referenced Assessment scores for Contrast Two School were gathered in 2001 using the Stanford Achievement Test (version 9), and students in the third grade scored in the 61st percentile for total reading, in the 45th percentile for total mathematics, and in the 53rd percentile for language arts. Students in the fifth grade scored in the 54th percentile for total reading, in the 33rd percentile for total mathematics, and in the 41st percentile for language arts.

Accelerated Reader is integrated into all classes at Contrast Two School. The teachers are very familiar with all of the procedures and they are changing to the point system per student, after using the number of books read the past years. At the end of each class, teachers provide time for Accelerated Reader. During the week there is one classroom period for media center. Media Center Specialist assists students in selection of books appropriate for their reading level and challenging them. Teachers also assist in this process. Students are also very encouraged to take books home to read or have family member read to them. Students are able to take Accelerated Reader practice quizzes in classroom, library and in the computer lab. Students keep their own individual reporting on computer. In all classes except Kindergarten, until students become independent readers, the teacher reads books to students, usually as a group, and then tests individually asking questions.

Students have about 30-40 minutes of individual reading time each day. Other reading times are: once a week library, end of each class, computer lab time once a week and homeroom time each day. During the homeroom reading time the teacher may read to students, students read aloud and students also read to other students. This is very productive reading time and the students are fully engaged during these times. During homeroom the teacher pulls student point sheets at least once a week. The at-risk readers are identified and given prompt special attention and often offered an incentive. The teachers do not provide follow-up to the Accelerated Reader practice quizzes, unless the students ask for help. And, the teachers then further assist students by recommending books and offer encouragement and recognize students for accomplishments in Accelerated Reader. Students have daily access to computers. Students are also able to receive the three type of reading practices of Renaissance Accelerated Reader: Reading to (by teacher/other students/family members), Reading With (read aloud), Reading Independently. The school has a Wall of Recognition for Accelerated Readers by categories (Independent – Advanced). Individual classrooms also have posters recognizing Accelerated Reader.

Only 10% of the total number of teachers (n=31) in the school had received model classroom certification from Reading Renaissance. Nearly 9 of 10 teachers (87%) surveyed had been implementing Reading Renaissance in their classrooms for 1 or more years. More than one-half of teachers (55%) said that their students spend less than 30 minutes each day involved in reading activities, while 32% said that their students spent 30 to 45 minutes each day, and the other 13% of classroom teachers reported students spent more than an hour. In rating the effectiveness of the Reading Renaissance program for helping them improve the reading skills of their students on a Likert scale, 1 being "Very Ineffective" and 10 being "Very Effective", the mean response from teachers was 7.1 (SD = 2.4, n = 31). On the same

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scale, most teachers seemed to agree that the Reading Renaissance program was fairly effective in helping then to foster a greater love for reading in their students ($M = 7.2$, $SD = 2$). Support from school administration was rated very highly ($M = 10$, $SD = 0$).

Teachers were asked to rate how effective they thought the Reading Renaissance Professional Development seminars were in preparing them to implement the program in their classrooms, and responding on the same scale as above, teachers said that the seminars were a little more than moderately effective for them, but there was a great deal of variance in the responses ($M = 6.6$, $SD = 3.5$). Teachers rated their overall satisfaction with Reading Renaissance with a mean response of 7.4, but there was a great deal of variance ($SD = 2.3$). According to the survey, administrators seem to have granted a great deal of support to the teachers for the implementation of the program ($M = 9$, $SD = 1.6$).

Based on the feedback received from parents, teachers rated the satisfaction of parents to the Reading Renaissance program as fairly positive ($M = 7.1$, $SD = 2.5$). Based on the feedback received from students, teachers rated the satisfaction of students about the same ($M = 7.2$; $SD = 2.4$).

The school did not own the Math Renaissance program.

Implementation

To measure the implementation of Reading Renaissance in the actual classrooms, trained observers were sent into the classrooms to measure certain aspects of the classroom and teacher-student interactions on a basis of present or not present. For the reading classrooms, an observation checklist stating 24 selected desirable behaviors was used (see Appendix A). The mean average percent of behaviors observed for the treatment schools was 53% ($SD = 0.3$), while only 39% of behaviors was observed for the contrast group ($SD = 0.3$). An Analysis of Variance was used to test the significance of the findings, and the findings were statistically significant $F(1, 98) = 3.94$, $p < 0.05$.

Trained observers were also sent into the classrooms to measure certain aspects of the classroom and teacher-student interactions. For the math classrooms, an observation checklist stating 20 selected desirable behaviors was used (see Appendix B). The mean average percent of behaviors observed for the treatment schools was 62% ($SD = 0.3$), while only 47% of behaviors were observed for the contrast group ($SD = 0.3$). An Analysis of Variance was used to test the significance of the findings, and these findings were also statistically significant $F(1, 86) = 3.95$, $p < 0.05$.

Treatment

School Renaissance is a K–12 model that helps educators use information to ensure success for every child. With ongoing, formative information on each student, classroom, and school, better instructional and curricular decisions are made and learning is accelerated. Renaissance provides the information technology, professional development, onsite consulting, and implementation and evaluation support to ensure that every educator can successfully integrate information into all levels of school functioning.

The School Renaissance model focuses on developing foundational skills in reading, writing, and math. These skills are the building blocks of a solid education. School Renaissance supports any curriculum. Teachers and principals integrate their textbooks, basals, and adopted curriculum into the model to create a comprehensive program. School Renaissance uses information technology to make curriculum and instruction more powerful.

Prior to this study, the two treatment schools (Treatment One School—Title I and urban, Treatment Two School—Title I and rural) had certified as Renaissance Master Schools, the most stringent level of implementation certification available. However, neither school had received the onsite consulting and ongoing partnership with Renaissance Learning involved in full School Renaissance Implementation. This study evaluated the effects of the full School Renaissance model on student achievement and school climate. Table 2 illustrates the type and amount of professional development received by each school in the study.

Results

Two separate sets of analyses were conducted to determine if the implementation of School Renaissance was effective. First standardized tests administered in Georgia were used and in the second analysis STAR Reading scores were used.

Georgia CRCT

Test scores from the Iowa Test of Basic Skills (ITBS) were collected from the treatment schools and contrast schools for the first year of observation (2000) to establish covariates for the analyses, and for the next two years (2001 & 2002) the Georgia Criterion-Referenced Competency Test (GCRCT) test scores were collected. Analysis of Covariance (ANCOVA) was used to test for differences between the treatment and contrast schools. For all three scales (reading, language arts, and math) when the spring 2001 CRCT scores were analyzed using the preceding springs ITBS scores as covariates, statistically significant *F*s were obtained indicating that the Renaissance schools had outperformed the contrast schools. See Tables 3-6. When the spring 2002 CRCT scores were used with the 2000 ITBS scores as covariates, the three statistically significant Fs indicated that the gain of the first year was maintained through the second year. The analyses of the spring 2002 CRCT scores with the 2001 CRCT scores as covariate demonstrated that not only were the gains of the Renaissance schools over the contrast schools made the first year maintained, but that the difference was increased during the second year.

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Table 2
Professional Development and Consulting During 2001–2002 School Year

	Treatment 1	Contrast 1	Treatment 2	Contrast 2
Introduction to Reading Renaissance one day seminar for new teachers	✓	o[†]	✓	o
Diagnosis and Intervention Training one day inservice seminar for all teachers	✓	o	o	o
Advanced Reading Renaissance two day inservice seminar for new teachers	o	o	✓	o
Math Renaissance one day inservice seminar for all teachers	✓	o	✓	o
Distance Consulting[‡]–reading	✓	o	✓	o
Distance Consulting—math	✓	o	✓	o
6 Onsite Consulting days—math	✓	o	✓	o
4 Onsite Consulting days—reading	✓	o	✓	o
District Coordinator training—three day offsite seminar for school leaders	✓	o	✓	o

[†] School uses Accelerated Reader, but has received no professional development. School is not engaged in School Renaissance.

[‡] Distance consulting involves four or six telephone consultations, one after each marking period, for the entire calendar year. Based on Accelerated Reader and Accelerated Math Diagnostic Reports, schools receive comprehensive written analyses of their Renaissance implementation. Renaissance Consultants then call the school to discuss practical tips and customized strategies to improve the integration of Renaissance technology into the classroom, library, and school.

Table 3
ANCOVA Results for Reading Scores, Georgia CRCT

Source	SS	df	MS	F	p
Dependent variable: Spring 2001 CRCT					
Corrected Model	129168.39	2	64584.20	89.6	.000
Intercept	2580812.70	1	2580812.70	3581.7	.000
Spring2000 ITBS reading	100971.88	1	100971.88	140.1	.000
Group	10649.20	1	10649.20	14.8	.000*
Error	9125.45	227	720.55		
Total	24690594.00	230			
Corrected Total	292732.70	229			
(adjusted means: X_t=329.58, X_c=313.32)					
Dependent variable: Spring 2002CRCT					
Corrected Model	41056.70	2	20528.35	31.0	.000
Intercept	3079216.98	1	3079216.98	4649.9	.000
Spring2000 ITBS reading	34357.62	1	34357.62	51.9	.000
Group	5271.75	1	5271.75	8.0	.000*
Error	169525.72	256	662.21		
Total	28635228.00	259			
Corrected Total	210582.42	258			
(adjusted means: X_t=335.23, X_c=326.11)					
Dependent variable: Spring 2002CRCT					
Corrected Model	30104.86	2	15052.43	21.0	.000
Intercept	176400.63	1	176400.63	246.1	.000
Spring2001 CRCT reading	13918.84	1	13918.84	19.4	.000
Group	8510.95	1	8510.95	11.9	.001*
Error	165598.60	231	716.88		
Total	25785997.00	234			
Corrected Total	195703.46	233			
(adjusted means: X_t=334.32, X_c=319.94)					

Table 4
ANCOVA Results for Language Arts Scores, Georgia CRCT

Source	SS	df	MS	F	p
Dependent variable: Spring 2001CRCT					
Corrected Model	208862.08	2	104431.04	134.4	.000
Intercept	2700756.74	1	2700756.74	3476.2	.000
Spring2000 ITBS LA	124495.10	1	124495.10	160.2	.000
Group	44014.33	1	44014.33	56.7	.000*
Error	177139.67	228	776.93		
Total	26921228.00	231			
Corrected Total	386001.75	233			
(adjusted means: X_t=346.91, X_c=313.97)					
Dependent variable: Spring 2002CRCT					
Corrected Model	27701.55	2	13850.77	15.5	.000
Intercept	3013386.80	1	3013386.80	3363.0	.000
Spring2000 ITBS LA	17706.26	1	17706.26	19.8	.000
Group	6772.80	1	6772.80	7.6	.006*
Error	231177.00	258	896.03		
Total	27115998.00	261			
Corrected Total	258878.55	260			
(adjusted means: X_t=325.30, X_c=314.95)					
Dependent variable: Spring 2002CRCT					
Corrected Model	19463.31	2	9731.66	16.0	.000
Intercept	276977.37	1	276977.37	454.5	.000
Spring2001 CRCT LA	4031.30	1	4031.30	6.6	.011
Group	8150.14	1	8150.14	13.4	.000*
Error	140768.54	231	609.39		
Total	24476414.00	234			
Corrected Total	160231.85	233			
(adjusted means: X_t=326.07, X_c=311.35)					

Table 5
ANCOVA Results for Mathematics Scores, Georgia CRCT

Source	SS	df	MS	F	p
Dependent variable: Spring 2001CRCT					
Corrected Model	173284.68	2	86642.34	218.6	.000
Intercept	2288417.63	1	2288417.63	5773.9	.000
Spring2000 ITBS Math	118944.61	1	118944.61	300.1	.000
Group	17216.83	1	17216.83	43.4	.000*
Error	90365.80	228	396.34		
Total	23911011.00	231			
Corrected Total	263650.48	230			
(adjusted means: X_t=325.03, X_c=304.10)					
Dependent variable: Spring 2002CRCT					
Corrected Model	57130.53	2	28565.27	57.6	.000
Intercept	2611705.53	1	2611705.53	5262.3	.000
Spring2000 ITBS Math	39975.39	1	39975.39	80.5	.000
Group	8820.73	1	8820.73	17.8	.006*
Error	127551.53	257	496.31		
Total	26497278.00	260			
Corrected Total	184682.06	259			
(adjusted means: X_t=323.31, X_c=311.38)					
Dependent variable: Spring 2002CRCT					
Corrected Model	38126.76	2	19063.38	29.2	.000
Intercept	140255.45	1	140255.45	214.8	.000
Spring2001 CRCT Math	12591.44	1	12591.44	19.3	.000
Group	10306.81	1	10306.81	15.8	.000*
Error	150818.40	231	652.89		
Total	24141586.00	234			
Corrected Total	188945.16	233			
(adjusted means: X_t=324.15, X_c=307.47)					

Table 6
Descriptive Statistics

Test	Treatment Group Mean (SD)	n	Contrast Group Mean (SD)	n
ITBS 2000 (NCE)				
Reading	50.08 (19.8)	178	47.86 (19.4)	118
Language Arts	57.52 (23.6)	178	50.77 (19.7)	121
Mathematics	56.67 (22.2)	178	48.72 (18.4)	119
CRCT 2001				
Reading	328.03 (30.4)	214	326.53 (51.2)	131
Language Arts	343.28 (42.3)	214	313.37 (28.2)	130
Mathematics	324.46 (32.6)	214	303.14 (29.5)	129
CRCT 2002				
Reading	346.17 (39.1)	386	324.30 (29.6)	132
Language Arts	330.98 (26.2)	386	312.13 (36.3)	132
Mathematics	329.06 (30.4)	386	308.45 (22.7)	132

STAR Reading

In the second analyses pre and post comparisons of treatment and control schools using Renaissance developed assessments (STAR). The results of the analysis of variance are reported in Table 7 with descriptive statistics in Table 8. Grades 3 and 4 had significant differences in favor of the Renaissance students. In grade 3 the treatment students gained while the contrast students stayed the same and in grade 4 the treatment students held their own while the contrast group declined.

Table 7
Star Reading Analyses (NCEs)

Source	SS	df	MS	F	p
Grade 2 in 2000-2001					
Corrected Model	70696.75	2	35348.38	377.0	.000
Intercept	735.63	1	735.63	7.8	.006
2000-2001 Star	66358.25	1	66358.25	707.7	.000
Group	19.41	1	19.41	.2	.650
Error	15564.39	166	93.76		
Total	513796.06	169			
Corrected Total	86261.15	168			
(adjusted means: X_t=49.92, X_c=50.62)					
Grade 3 in 2000-2001					
Corrected Model	67253.94	2	33626.97	586.2	.000
Intercept	845.64	1	845.64	14.7	.000
2000-2001 Star	67225.32	1	67225.32	1171.8	.000
Group	275.50	1	275.50	4.8	.030*
Error	11530.98	201	57.37		
Total	489350.82	204			
Corrected Total	78784.92	203			
(adjusted means: X_t=46.16, X_c=43.82)					
Grade 4 in 2000-2001					
Corrected Model	27217.01	2	13608.51	119.5	.000
Intercept	542.08	1	542.08	4.8	.031
2000-2001 Star	23592.11	1	23592.11	207.2	.000
Group	683.17	1	683.17	6.0	.016*
Error	14460.18	127	113.86		
Total	261216.95	130			
Corrected Total	41677.19	129			
(adjusted means: X_t=42.41, X_c=36.90)					

Table 8
Mean 2000-2001 and 2001-2002 Star Reading Scores in NCEs

Grade	Group	n	2000-2001 Star Reading (SD)	2001-2002 Star Reading (SD)	Adjusted Means
3	Treatment	78	46.00 (21.8)	44.82 (19.1)	49.92
	Contrast	91	56.88 (23.8)	54.99 (24.4)	50.62
4	Treatment	91	42.72 (18.3)	45.28 (17.5)	46.16
	Contrast	113	44.44 (21.4)	44.53 (21.4)	43.82
5	Treatment	99	44.29 (17.7)	44.05 (19.0)	42.41
	Contrast	31	35.78 (13.3)	31.66 (9.6)	36.90

Effect Size

Effect sizes were conservatively estimated (Holmes, 1984) and are reported in Table 9. All but one of the 12 effect sizes was positive indicating that the effect favored students in the Renaissance schools. The average overall effect was +.55. When the ESs calculated from the ANCOVAs involving the STAR reading data are not included, the overall average effect size is +.65. Since the STAR test is designed for use with the Accelerated Reader program which is used by all four of the schools, it is not surprising that the effect on that test is lower. The average ES for reading was +.37 (+.50 without the STAR measures), ES for language arts was +.71 and for mathematics ES=+.75. The Renaissance students outperformed the contrast students on the adjusted post tests by about ½ to ¾ of a standard deviation. Table 10 reports ES estimations by comparison groups.

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Table 9

Effect Sizes

Grade	Total N	Dependent Variable	Subject	Covariate	ES
3	230	2001 CRCT	Reading	2000 ITBS	+ .61
3	169	2002 STAR	Reading	2001 STAR	- .13
4	234	2002 CRCT	Reading	2001 CRCT	+ .54
4	259	2002 CRCT	Reading	2000 ITBS	+ .35
4	204	2002 STAR	Reading	2001 STAR	+ .31
5	130	2002 STAR	Reading	2001 STAR	+ .52
average ES (reading) = +.37					
3	231	2001 CRCT	Lang Arts	2000 ITBS	+1.18
4	234	2002 CRCT	Lang Arts	2001 CRCT	+ .60
4	261	2002 CRCT	Lang Arts	2000 ITBS	+ .35
average ES (language arts) = +.71					
3	231	2001 CRCT	Mathematics	2000 ITBS	+1.05
4	234	2002 CRCT	Mathematics	2001 CRCT	+ .65
4	260	2002 CRCT	Mathematics	2000 ITBS	+ .54
average ES (mathematics) = +.75					
average overall ES= +.55					

Table 10

Comparison by School Pairs

Grade	Total N	Pair	Dependent Variable	Subject	Covariate	F	p	ES
3	81	1	2001 CRCT	Reading	2000 ITBS	2.15	.15	+ .33
3	72	1	2002 STAR	Reading	2001 STAR	0	.99	+ .00
4	76	1	2002 CRCT	Reading	2001 CRCT	3.06	.08	+ .40
4	72	1	2002 CRCT	Reading	2000 ITBS	5.82	.02	+ .58
4	63	1	2002 STAR	Reading	2001 STAR	1.91	.17	+ .35
5	59	1	2002 STAR	Reading	2001 STAR	.19	.67	+ .11
3	149	2	2001 CRCT	Reading	2000 ITBS	5.01	.03	+ .61
3	97	2	2002 STAR	Reading	2001 STAR	.07	.79	- .06
4	158	2	2002 CRCT	Reading	2001 CRCT	1.60	.21	+ .31
4	187	2	2002 CRCT	Reading	2000 ITBS	2.04	.16	+ .22
4	141	2	2002 STAR	Reading	2001 STAR	1.84	.18	+ .23
average ES (reading) = + .29								
3	81	1	2001 CRCT	Lang Arts	2000 ITBS	4.02	.05	+ .45
4	76	1	2002 CRCT	Lang Arts	2001 CRCT	2.24	.14	+ .34
4	72	1	2002 CRCT	Lang Arts	2000 ITBS	4.40	.04	+ .50
3	150	2	2001 CRCT	Lang Arts	2000 ITBS	45.38	.00	+1.78
4	158	2	2002 CRCT	Lang Arts	2001 CRCT	3.26	.07	+ .44
4	189	2	2002 CRCT	Lang Arts	2000 ITBS	4.08	.05	+ .30
average ES (language arts) = + .64								
3	81	1	2001 CRCT	Mathematics	2000 ITBS	9.58	.00	+ .69
4	76	1	2002 CRCT	Mathematics	2001 CRCT	3.14	.08	- .41
4	72	1	2002 CRCT	Mathematics	2000 ITBS	.17	.68	+ .10
3	150	2	2001 CRCT	Mathematics	2000 ITBS	16.50	.00	+1.07
4	158	2	2002 CRCT	Mathematics	2001 CRCT	13.25	.00	+ .89
4	188	2	2002 CRCT	Mathematics	2000 ITBS	19.15	.00	+ .66
average ES (reading) = + .50								
average overall ES= + .44								

Conclusion

While many of the comparisons made in evaluating reform programs look at one year's third grade scores to the next year's third grade scores, a comparison that often is not valid, this study sought to follow a cohort of children across three grades to evaluate the effects of implementation of School Renaissance on the progress of individual children. ANCOVA was used to statistically equate the groups. In all nine comparisons involving standardized test scores in reading, language arts, and mathematics, the Renaissance schools' children outperformed the contrast schools' children. It can only be concluded that the Renaissance program was highly effective in raising the performance of these elementary students.

These pupils were predominately eligible to participate in the free/reduced-priced lunch program. They were about ½ white, ½ black, ½ male and ½ female. The effect sizes calculated in this study may be consistent with Paul's (1992) observation that Accelerated Reader produces the greatest gains with lower achieving students.

The Treatment Two School, although it has a student body with 52% free/reduced-priced lunch eligible, had 97% of its students obtain a "passing" score on the 2002 CRCT with nearly 75% scoring "exceeds expectation". The Renaissance program is working for them.

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Appendix A

Reading Classroom Implementation Observation Checklist

Observer: Check Each Behavior As You See That It Is Present.

During my class visit I saw:	
Teacher reading to students	
Teacher listening to students read	
Students reading independently	
Students reading with no difficulty	
Students using/selecting books to read	
Teacher selecting books for children to read	
Teachers assessing reading skills	
Student using computer to assess reading skills	
A report of student progress in reading	
A reading progress report sent home to parents	
A reading log used by the student	
A reading log used by the teacher	
Teacher reviewing a student reading log	
Teacher talking to student about book student is reading independently	
Teacher intervening with a struggling student	
Teacher reviewing a student reading progress for the class and individual students	
Teacher set individual reading goal for a student or students	
Teacher helping student to select a book	
Teacher say to a student "you need to read a higher level book"	
Teacher give feedback to student[s]	
Teacher give recognition for student accomplishment	
Teacher motivate student to read	
Displays charting individual student progress	

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Appendix B

Math Classroom Implementation Observation Checklist

Observer: Check Each Behavior As You See That It Is Present.

During my class visit I saw:

Teacher Delivering the Math Lesson	
Teacher asking students questions relating to the math lesson	
Students working Math problems independently	
Students solving math problems with no difficulty	
Teacher assessing math skills	
Students using computer to assess math skill	
A report of student progress in math	
A math progress report sent home to parents	
A math record of objectives accomplished used by student	
A math record of objectives accomplished used by the teacher	
Teacher reviewing a student's record of math accomplishments	
Teacher talking to student about math problem student is working on independently	
Teacher intervening with a struggling student	
Teacher reviewing reports of student math progress for the class and individual	
Teacher set individual math goal for a student or students	
Teacher helping student to complete a math problem	
Teacher give feedback to student)	
Teacher give recognition for student accomplishments	
Teacher motivate student to complete math lesson	
Displays charting individual student progress	

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